CLAIMS

WHAT IS CLAIMED IS:

1. An isolated nucleic acid comprising a nucleotide sequence encoding a TCL-1 protein, wherein the nucleotide sequence is a cDNA sequence.

2. An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion encoding a TCL-1 protein fragment.

3. An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion of the sequence depicted in SEQ ID NO: 3.

4. The isolated nucleic acid of Claim 1 comprising the nucleotide sequence of SEQ ID NO:1 from nucleotide number 46 to 387.

SUB B2

5. An isolated TCL-1 protein.

6. The TCL-1 protein of Claim 5 having the amino acid sequence of SEQ ID NO: 2 from amino acid number 1 to 114.

7. A fragment of the protein of Claim 6 which can be specifically bound by an antibody to a TCL-1 protein.

8. An isolated nucleic acid comprising a sequence encoding the fragment of Claim 7.

9. A recombinant DNA vector comprising a nucleotide sequence that encodes a TCL-1 protein, wherein the nucleotide sequence is a cDNA sequence.

10. An host cell that contains the recombinant DNA vector of Claim 9.

11. An antisense molecule comprising a nucleotide sequence complementary to at least a part of the coding sequence of a TCL-1 protein, which is hybridizable to a *TCL-1* mRNA.

12. An antisense molecule comprising a nucleotide sequence complementary to at least a part of the sequence depicted in SEQ ID NO: 3 which hybridizes to said sequence depicted in SEQ ID NO: 3.

Sub B3

13. A fusion protein comprising a TCL-1 protein sequence of at least 10 amino acids linked to a non-TCL-1 protein sequence.

14. An antibody which binds to an epitope of a TCL-1 protein.

15. The antibody of Claim 14 which is a monoclonal antibody.

16. The antibody of Claim 14 which is a polyclonal antibody.

Sub B4

17. A method for producing a recombinant TCL-1 protein comprising:

(a) culturing a host cell transformed with a recombinant expression vector encoding a TCL-1 protein such that the TCL-1 protein is expressed by the cell; and

(b) recovering the expressed TCL-1 gene protein.

18. An isolated protein comprising an amino acid sequence having at least 70% amino acid sequence identity to the amino acid sequence depicted in SEQ ID NO: 2, over a contiguous sequence of at least 25 amino acids.

19. An isolated protein comprising an amino acid sequence having at least 70% amino acid sequence identity to the amino acid sequence depicted in SEQ ID NO: 2, over a contiguous sequence of at least 50 amino acids.

20. Plasmid pA11.5 as deposited with the ATCC and having accession No. ____.

21. Plasmid p20-7SE as deposited with the ATCC and having accession No.____.

22. A method for detecting a target sequence indicative of a chromosome 14 abnormality in a sample, comprising the steps of:

(a) amplifying the target sequence in the sample using a first primer of 18 to 25 nucleotides complementary to the nucleotide sequence of SEQ ID NO: 1, and a second primer complementary to a region telomeric or centromeric to the *TCL-1* gene; and

(b) detecting any resulting amplified target sequence in which the presence of the amplified target sequence is indicative of the abnormality.

23. The method of Claim 22 wherein the chromosome abnormality is in the *TCL-1* locus.

24. The method of Claim 22 wherein the chromosome abnormality is a t(14:14)(q11:q32) translocation.

25. The method of Claim 22 wherein the chromosome abnormality is a inv(14)(q11;q32) inversion.

26. The process of Claim 22 wherein the resultant amplified target sequence is detected using gel electrophoresis.

27. The process of Claim 22 wherein the second primer is a polynucleotide from the T-cell receptor α/δ locus.

28. The method of Claim 22 wherein the target sequence is amplified using polymerase chain reaction.

29. A pharmaceutical composition comprising the antisense molecule of Claim 11 in a pharmaceutically acceptable carrier.

30. A pharmaceutical composition comprising the antisense molecule of Claim 12 in a pharmaceutically acceptable carrier.

31. A pharmaceutical composition comprising an antibody of Claim 14 in a pharmaceutically acceptable carrier.

32. A method for detecting a target nucleotide sequence indicative of a chromosome 14 abnormality in a nucleic acid sample, comprising the steps of:

(a) hybridizing the sample with a nucleic acid probe of not more than 10 kilobases, comprising in the range of 15-1324 nucleotides complementary to the nucleotide sequence of SEQ ID NO: 1; and

(b) detecting or measuring the amount of any resulting hybridization between the probe and the target sequence within the sample.

33. The method of Claim 32 wherein the resultant hybridization between the probe and the target sequence within the sample is detected using gel electrophoresis.

34. The method of Claim 32 wherein the chromosome 14 abnormality is in the *TCL-1* locus.

35. The method of Claim 32 wherein the chromosome 14 abnormality is a t(14:14)(q11:q32) translocation.

36. The method of Claim 32 wherein the chromosome 14 abnormality is a inv(14)(q11;q32) inversion.

37. A method for detecting a TCL-1 protein in a patient sample, comprising:

(a) contacting the patient sample with an anti-TCL-1 antibody under conditions such that immunospecific binding can occur, and

(b) detecting or measuring the amount of any immunospecific binding by the antibody.

38. The method of Claim 37 wherein the TCL-1 protein is human.

39. The method of Claim 37 that is a Western blot.

40. The method of Claim 37 that is an enzyme linked immunosorbent assay.

41. The method of Claim 37 that is an *in situ* hybridization assay.

42. The method of Claim 37 that is an immunoprecipitation.

43. A diagnostic kit comprising, in a container a compound comprising a probe of not more than 10 kilobases and comprising in the range of 15-1324 nucleotides of the nucleotide sequence of SEQ ID NO:1 or its complement.

44. A diagnostic kit comprising in one or more containers, a pair of primers, each having at least 15-25 nucleotides, in which at least one of said primers is hybridizable to SEQ ID NO: 1 or its complement and

wherein said primers are capable of priming DNA synthesis in a nucleic acid amplification reaction.

45. The kit of Claim 44 in which one of said primers is hybridizable to a DNA sequence located telomeric or centromeric to the *TCL-1* gene.

46. A method for treating a disease state associated with a chromosome 14 abnormality in mammal suffering from a disease state associated with a chromosome 14 abnormality, comprising administering a therapeutically effective amount of a *TCL-1* antisense molecule to a mammal suffering from a disease state associated with a chromosome 14 abnormality.

47. The method of Claim 46 wherein the disease state is a T-cell leukemia or lymphoma.

48. The method of Claim 46 wherein the chromosome abnormality is a t(14:14)(q11:q32) translocation or an inv(14)(q11;q32) inversion.

49. The method of Claim 46 wherein the mammal is a human.

50. A method for treating a disease state associated with a chromosome 14 abnormality in mammal suffering from a disease state associated with a chromosome 14 abnormality, comprising administering a therapeutically effective amount of an anti-TCL-1 antibody to a mammal suffering from a disease state associated with a chromosome 14 abnormality.

51. The method of Claim 50 wherein the anti-TCL-1 antibody is a monoclonal antibody.

52. The method of Claim 50 wherein the disease state is a T-cell leukemia or lymphoma.

53. The method of Claim 50 wherein the chromosome abnormality is a t(14:14)(q11:q32) translocation or an inv(14)(q11;q32) inversion.

54. The method of Claim 50 wherein the mammal is a human.

55. An isolated oligonucleotide having in the range of 15-25 nucleotides which is hybridizable to a DNA molecule, said molecule comprising at least one *TCL-1* exon or its complement.

56. An isolated oligonucleotide having in the range of 15-25 nucleotides which is hybridizable to a DNA molecule, said molecule comprising the sequence shown in SEQ ID NO: 3 or its complement.

57. A method of diagnosing a T-cell malignancy associated with a chromosome 14 abnormality in a patient comprising detecting said chromosome 14 abnormality according to the method of 22 or 32, in which the presence of the amplified target sequence indicates the presence of a T-cell malignancy in the patient.

58. A method of diagnosing a T-cell malignancy associated with a chromosome 14 abnormality in a patient comprising detecting increased expression of a TCL-1 protein in a sample from the patient, in which an increase in a TCL-1 protein relative to the level found in an analogous sample from a normal individual, indicates the presence of a T-cell malignancy in the patient.

59. The method of Claim 58 in which the increased expression of the TCL-1 protein is measured by immunoassay.

60. The method of Claim 59 in which the immunoassay is an enzyme linked immunosorbant assay.

61. The method of Claim 58 in which the increased expression of the TCL-1 protein is measured by *in situ* hybridization.

62. The method of Claim 57 or 58 in which the T-cell malignancy is a T-cell leukemia.

63. An isolated nucleic acid of not more than 10 kilobases hybridizable under stringent conditions to the sequence shown in SEQ ID NO: 1 or its complement.

64. An isolated nucleic acid of not more than 50 kilobases which contains at least an 18 nucleotide portion of the sequence depicted in SEQ ID NO: 5.

65. An isolated oligonucleotide having in the range of 15-25 nucleotides which is hybridizable to a DNA molecule, said molecule comprising the sequence shown in SEQ ID NO: 5 or its complement.